

WHAT IS CLAIMED IS:

1. A defect inspection apparatus comprising:
an inspection section which inspects a front
surface and a rear surface of a sample;
5 a control section which processes image data on
the front surface and rear surface of the sample
obtained by the inspection section;
moving section provided in the inspection section
and capable of reciprocating the sample;
10 illumination section which illuminates the front
surface and rear surface of the sample moved by the
moving section; and
image pickup section which picks up images of the
front surface and rear surface of the sample
15 illuminated by the illumination section,
wherein at least one of an incidence angle of the
illumination section on the sample and an image pickup
angle of the image pickup section to the sample is
changeable.
- 20 2. The defect inspection apparatus according to
claim 1, wherein the incidence angle and the image
pickup angle are set to a first angle for picking up a
regular reflection image, and a second angle, which is
at least one of the incidence angle and the image
25 pickup angle changed from the first angle, for picking
up an image other than the regular reflection image.
3. The defect inspection apparatus according to

claim 2, wherein the first angle for picking up an image of the front surface of the sample and the first angle for picking up an image of the rear surface of the sample are the same.

5 4. The defect inspection apparatus according to claim 2, wherein the regular reflection image is picked up at the first angle when the sample is moved in one direction, and the image other than the regular reflection image is picked up at the second angle when
10 the sample is moved in a direction opposite to the one direction.

 5. The defect inspection apparatus according to claim 1, wherein at least one of the illumination section and the image pickup section is provided in
15 such a manner that it is turnable.

 6. The defect inspection apparatus according to claim 1, wherein the control section subjects, to image processing, the image data on a regular reflection image and the image data other than the regular
20 reflection image on the front surface and rear surfaces of the sample taken in from the image pickup section, and displays results thereof on a display section.

 7. The defect inspection apparatus according to claim 1, wherein the moving section includes an
25 invertible holding member which holds the front surface and rear surface of the sample while leaving them open, and the illumination section and the image pickup

section are disposed on one side of the front surface and rear surface of the sample held by the holding member, and the holding member is inverted when the front surface and rear surface of the sample are inspected.

8. The defect inspection apparatus according to claim 1, wherein the holding member holds a peripheral edge of the sample, and inverts with an approximate center of thickness of the sample as a rotation axis.

9. The defect inspection apparatus according to claim 1, wherein the moving section includes a holding member in which part for mounting a rear surface side of the sample is formed of a transparent material, and the illumination section and the image pickup section are respectively disposed on both sides of the front surface and rear surface of the sample held by the holding member.

10. The defect inspection apparatus according to claim 1, wherein the moving section is a holding member which pinches and holds an edge portion of the sample.

11. The defect inspection apparatus according to claim 1, wherein the moving section includes a holding member which leaves the front surface and rear surface of the sample open or a holding member whose rear surface side is transparently formed, and this holding member is movably stood in a Z axis direction, and the illumination section and the image pickup section,

which inspect respectively the front surface and rear surface of the sample, are disposed on both sides of the holding member.

12. The defect inspection apparatus according to
5 claim 1, wherein the inspection section comprises
a first inspection section which inspects the front
surface of the sample and a second inspection section
which inspects the rear surface of the sample, and
the second inspection section is provided between
10 a carrying section which carries the sample, and the
first inspection section.

13. The defect inspection apparatus according to
claim 1, wherein the moving section comprises
a carrying arm which holds the rear surface of the
15 sample while leaving the rear surface open, and
a holding member which receives the sample from the
carrying arm and holds the sample, and the illumination
section and the image pickup section are disposed on
the rear surface side of the sample in a carrying path
20 of the carrying arm, and the illumination section and
the image pickup section are disposed on a front
surface side of the sample held by the holding member.

14. The defect inspection apparatus according
to claim 1, wherein the moving section includes
25 a plurality of non-contact carrying conveyers which
carry the sample, and a clearance to pick up an image
of the rear surface of the sample is provided in

a direction crossing a carrying direction of the sample in the carrying path of the plurality of carrying conveyers.

5 15. The defect inspection apparatus according to claim 1, wherein the moving section includes a holding member which holds the sample, and the holding member is rotatable in a horizontal direction so that an illumination direction of the illumination section is changed in accordance with the sample.

10 16. The defect inspection apparatus according to any of claim 1, wherein the illumination section includes a linear light source which applies a linear parallel light to the surface of the sample at a predetermined incidence angle, and the image pickup
15 section includes a line sensor camera which picks up an image of the sample linearly irradiated by the linear light source.